Abstracts

Solid-state terahertz sources using quantum-well intersubband transitions

P. Harrison, R.W. Kelsall, K. Donovan and P. Kinsler. "Solid-state terahertz sources using quantum-well intersubband transitions." 2000 Transactions on Microwave Theory and Techniques 48.4 (Apr. 2000, Part II [T-MTT] (Special Issue on Terahertz Electronics)): 645-652.

In this paper, it is shown that the confined states within the conduction band of quantum-well systems have potential as sources of terahertz radiation. It is demonstrated that it is the dynamical properties of the electrons within these levels that must be manipulated in order to favor radiative emission rather than nonradiative loss. Designs are advanced for tunable emitters, optically excited lasers, and the active regions of electrically injected terahertz lasers. In the latter two device types, it is shown that the electron dynamics can be manipulated to favor population inversion at room temperature.

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